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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,258

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Yiou-Wen Cheng

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EXAMINER

LEE, PING

ART UNIT

PAPER NUMBER

2615

MAIL DATE

DELIVERY MODE

03/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/812,258

Applicant(s)

CHENG ET AL.

Examiner

Ping Lee

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowe et al (hereafter Lowe) (US005436975A).

Regarding claim 1, Lowe discloses an apparatus for generating a stereo sound, comprising:

at least a direct sound positioner (the upper circuit as shown in Fig. 3 for generating 122 and 136) used to generate at least a direct sound signal after receiving an input sound channel;

at least a reverberation positioner (the lower circuit as shown in Fig. 3 for generating 164, 166 and 168) used to generate at least a reverberation direction signal after receiving the input sound channel;

at least a first sound integrator (68, 74) used to receive the direct sound signal and output an integrated direct sound signal;

at least a second sound integrator (50; 52) used to receive the reverberation direction signal and output an integrated reverberation direction signal;

at least a reverberation generator (58, 62) used to receive the integrated reverberation direction signal and output a reverberation signal; and

at least a space processor (36, 76, 78) used to perform a timing control and adjust a mixed volume of the signals output from the sound integrators (the timing

control has been discussed under col. 4, lines 20-38; the filter 36 determines the sound image from the side as shown in Fig. 1; the filter 36 and adders 76 and 78 perform the adjustment of a mixed volume of the signals from the sound integrators) and receive the integrated direct sound signal and the reverberation signal and output the stereo sound for a user.

Regarding claim 2, Lowe shows that the direct sound positioner (in Fig. 3) generates a right direct sound signal or a left direct sound signal.

Regarding claim 5, Lowe shows in Fig. 2 that the first sound integrator (74) is a right sound integrator used to receive the right direct sound signal generated by the direct sound positioner to output an integrated sound signal, the integrated sound signal being an integrated right direct sound signal.

Regarding claim 3, Lowe shows in Fig. 3 that the reverberation direction signal generated by the reverberation positioner is a right reverberation direction signal or a left reverberation direction signal.

Regarding claim 4, Lowe shows in Fig. 2 that the first sound integrator (68) is a left sound integrator used to receive the left direct sound signal generated by the direct sound positioner to output an integrated sound signal, the integrated sound signal being an integrated left direct sound signal.

Regarding claim 6, Lowe shows that the second sound integrator (50) is a left sound integrator used to receive the left reverberation direction signal generated by the reverberation positioner to output an integrated sound signal, the integrated sound signal being an integrated left reverberation direction signal.

Regarding claim 7, Lowe shows that the second sound integrator (52) is a right sound integrator used to receive the right reverberation direction signal generated by the reverberation positioner to output an integrated sound signal, the integrated sound signal being an integrated right reverberation direction signal.

Claims 12-18 and 21 specify a method corresponding to the apparatus as specified in claims 1-7 as discussed previously.

Regarding claims 23 and 25, Lowe further shows that the claimed "a plurality of sound channel" corresponds to the plurality of sound source inputs applied to the positioners (38, 80, 86).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 8, 9, 11, 19, 20, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe '975 in view of Lowe et al (hereafter Lowe '799) (US005371799A).

The system of Lowe '975 has been discussed above. Regarding claims 8, 9, 11, 19, 20, 22 and 24, Lowe '975 teaches a general reverberator and early reflection generator, but fails to explicitly disclose the design for the reverberator (62) and the early reflection generator (58) using FIR. One skilled in the art would have expected that any specific design, including those using FIR filters, could be used without generating any unexpected result. In the same field of endeavor, Lowe '799 teaches

that FIR filters could be used for simulating the early reflection and reverberation (col. 3, lines 46-50). Thus, it would have been obvious to one of ordinary skill in the art to modify Lowe '975 in view of Lowe '799 by utilizing FIR filters for generating the reverberation and early reflection.

Response to Arguments

5. Applicant's arguments filed 12/26/07 have been fully considered but they are not persuasive.

Applicant argued that Lowe '975 fails to show that the space processor receives the integrated direction sound signal and the reverberation signal. Examiner disagrees. The elements 36, 76 and 78 receive the integrated direction sound signal generated from 68 and 74 and the reverberation signal generated from reverberation generator 58 and 62. The output from 58 will go to elements 36, 76 and 78 through 64 and 68, 66 and 74. The fact that adders 64 and 66 receive other inputs is irrelevant to the claim limitation.

Applicant argued that Lowe' 975 fails to show the space processor as specified in claim 1. The cited text discussed timing control. Imagine a sound source is located on side 20 as shown in Fig. 1, a timing control would effectively generate a sound applied to the left side of the headphones earlier than the sound applied to the right side of the headphones, since the simulated sound source is located closer to the left ear than the right ear. For the same sound source located to on the left side of the listener, a mixed volume for the left and right speakers would be adjusted, so the listener would perceive

that the sound source is located to his/her left side with a louder sound than the sound on the right ear. The space processor (36, 76, 78) has to combine the signals from integrators properly, in terms of timing control and weighting of left with respect to the right, in order to generate a perceived sound image location correctly.

Applicant argued that Lowe '975 fails to show first and second space processors as specified in claim 23. Examiner disagrees. The integrated signal output from the first left sound generator (68) and a generated signal output from the left reverberation generator (the part of 58 and 62 that generate the outputs to 64) are applied to a first space processor (the part of 36 generating output applied to 76, and 76). The integrated signal output from the first right sound integrator (74) and an generated signal output from the right reverberation generator (the part of 58 and 62 that generate the outputs to 66) are applied to a second space processor (the part of 36 generated output applied to 78, and 78).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522.

The examiner can normally be reached on Monday, Wednesday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ping Lee/

Primary Examiner, Art Unit 2615

pwl